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MOAB UTAH

UMTRA Project

July 2005 Water Sampling Validation Data Package for Configuration 2 Interim Action Injection Test Sampling Moab, Utah

October 2005

U.S. Department of Energy

Office of Environmental Management

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July 2005 Water Sampling

Validation Data Package for Configuration 2 Interim Action Injection Test Sampling Moab, Utah

October 2005

Moab, Utah

July 26-28, 2005

Data Package Contents

This data package includes the following information:

Item No.	Description of Contents
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2.	**Sample Location Map**
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Sampling Event Summary

Site: Moab, Utah

Sampling Period: July 26-28, 2005

The purpose of this sampling event was to collect data that can be used to evaluate the Configuration 2 injection system. This is the tenth round of sampling of the injection system since the baseline samples were collected just prior to starting injection on October 6, 2004.

According to the USGS Cisco Gaging Station, the mean daily Colorado River flows during the time period of this sampling event were between 4,950 and 6,640 cubic feet per second. These values are approximately one-third the flow during the previous month's sampling event.

Sampling and analysis was conducted in accordance with the *Operations, Maintenance, and Performance Monitoring Plan for the Interim Action Ground Water Treatment System, February 2004.* Ground water samples were collected from 11 Configuration 2 observation wells 0402, 0408, 0580, 0582, 0583, 0584, 0585, 0586, 0587, 0588 (34 feet below ground surface [bgs]) and 0589 (44 feet bgs), two surface water locations 0236 and 0240, one piezometer 0590, and one injection water sample 0550. Including one duplicate and one equipment blank, a total of 17 samples were submitted for laboratory analysis.

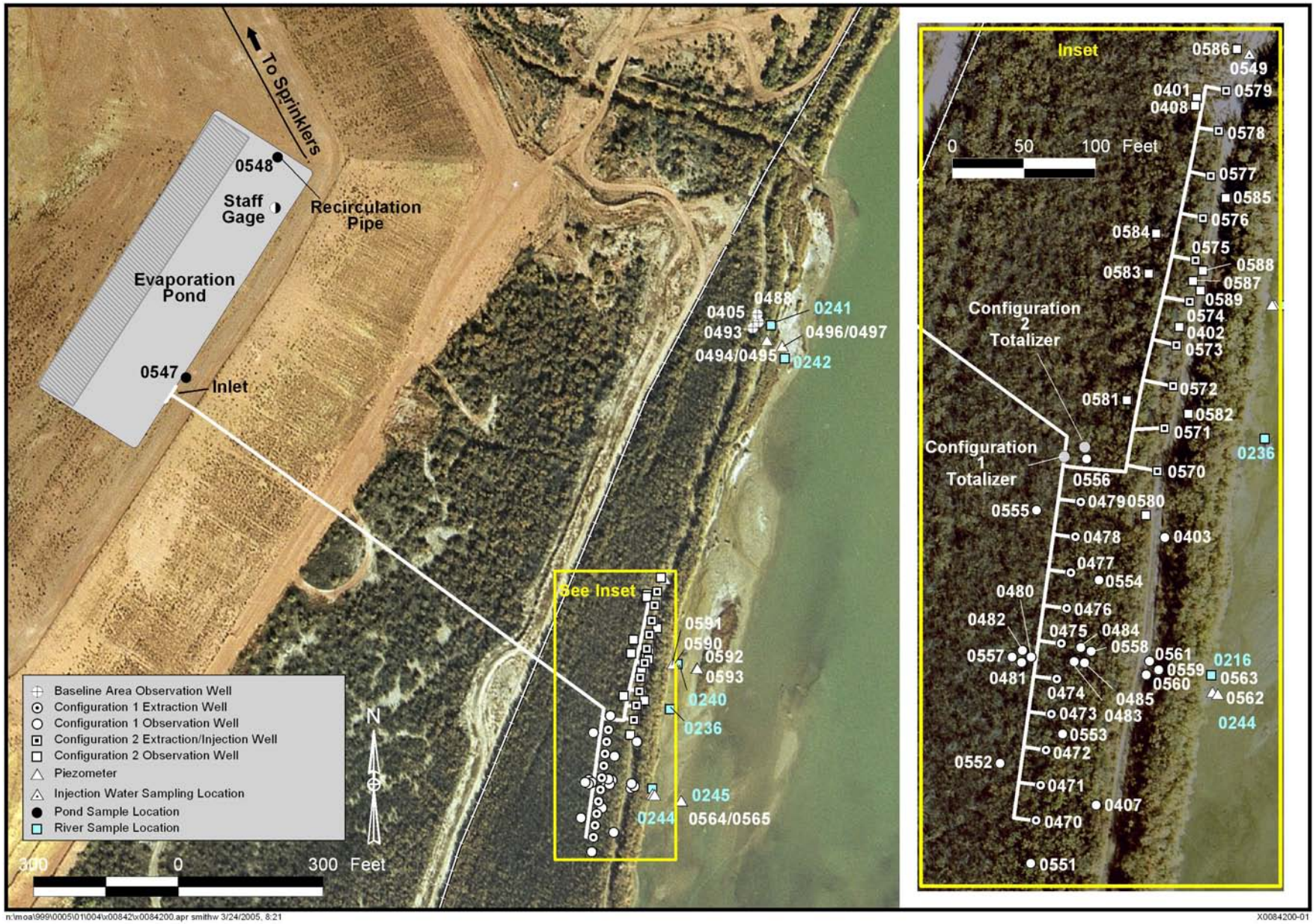
Analysis and interpretation of the validated data presented in this package will be reported as part of a performance evaluation report on the injection system scheduled in 2005. However, to monitor performance of the injection effort, time-versus concentration graphs are included for certain key indicator wells and major contaminants of concern. Generally, contaminant concentrations continue to be suppressed by the injection of fresh water in combination with the recent high stage of the Colorado River. One exception to this is well 0589, the graph shows ammonia and uranium concentrations decreasing from May 2004 through January 2005. Thereafter, concentrations increased to near previous levels and have generally stabilized. Well 0589 is screened (and sampled) deeper than adjacent well 0587. Beginning in February 2005 the injection rates for Configuration 2 decreased. The time-versus concentration graph for 0589 apparently reflects these conditions with the lower injection rate not affecting the deeper zone, but still keeping shallow zone concentrations relatively low.

The data validation indicated the data meet the quality control criteria specified for this project. No significant discrepancies were noted regarding sample shipping/receiving, preservation and holding times, lab instrument calibration, method blanks, matrix spikes, etc., except as qualified.

John R. Ford
Ground Water Lead

10-21-2005
Date

Sample Location Map



Sample Locations at the Interim Action Well Field and Baseline Area (may include locations not sampled)

Data Assessment Summary

Water Sampling Field Activities Verification Checklist

Project	Moab, Utah	**Date(s) of Water Sampling**	July 26-28, 2005
Date(s) of Verification	September 16, 2005	**Name of Verifier**	Jeff Price

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures?	Yes	
List other documents, SOP's, instructions.	NA	
2. Were the sampling locations specified in the planning documents sampled?	No	See trip report for explanation.
3. Was a pre-trip calibration conducted as specified in the above named documents?	Yes	
4. Was an operational check of the field equipment conducted twice daily?	Yes	
Did the operational checks meet criteria?	Yes	
5. Were the number and types (alkalinity, temperature, Ec, pH, turbidity, DO, ORP) of field measurements taken as specified?	Yes	
6. Was the Category of the well documented?	Yes	
7. Were the following conditions met when purging a Category I well:		
Was one pump/tubing volume purged prior to sampling?	Yes	
Did the water level stabilize prior to sampling?	Yes	
Did pH, specific conductance, and turbidity measurements stabilize prior to sampling?	Yes	
Was the flow rate less than 500 mL/min?	Yes	
If a portable pump was used, was there a 4 hour delay between pump installation and sampling?	NA	

Water Sampling Field Activities Verification Checklist (continued)

	Response (Yes, No, NA)	Comments
8. Were the following conditions met when purging a Category II well:		
Was the flow rate less than 500 mL/min?	Yes	
Was one pump/tubing volume removed prior to sampling?	Yes	
9. Were duplicates taken at a frequency of one per 20 samples?	Yes	
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with nondedicated equipment?	Yes	
11. Were trip blanks prepared and included with each shipment of VOC samples?	NA	
12. Were QC samples assigned a fictitious site identification number?	Yes	
Was the true identity of the samples recorded on the Quality Assurance Sample Log?	Yes	
13. Were samples collected in the containers specified?	Yes	
14. Were samples filtered and preserved as specified?	Yes	
15. Were the number and types of samples collected as specified?	Yes	
16. Were chain of custody records completed and was sample custody maintained?	Yes	
17. Are field data sheets signed and dated by both team members?	Yes	
18. Was all other pertinent information documented on the field data sheets?	Yes	
19. Was the presence or absence of ice in the cooler documented at every sample location?	Yes	
20. Were water levels measured at the locations specified in the planning documents?	Yes	

Laboratory Performance Assessment

General Information

Requisition No.:	05070215
Sample Event:	July 26-28, 2005
Site(s):	Moab, Utah
Laboratory:	Paragon Analytics
Work Order No.:	0507286
Analysis:	Metals and Inorganics
Validator:	Steve Donivan
Review Date:	September 8, 2005

This validation was performed according to the *Environmental Procedures Catalog* (STO 6), "Standard Practice for Validation of Laboratory Data", GT-9(P) (2004). All analyses were successfully completed. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 1. The samples were analyzed concurrently with those from requisition identification number (RIN) 05070214. The sample matrix for all samples is equivalent allowing the use common quality assurance samples.

Table 1. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Uranium, U	GJO-01	SW-846 3005A	SW-846 6020A
Chloride, Cl	MIS-A-039	SW-846 9056	SW-846 9056
Sulfate, SO4	MIS-A-044	SW-846 9056	SW-846 9056
Ammonia as N, NH_3-N	WCH-A-005	MCAWW 350.1	MCAWW 350.1
Total Dissolved Solids, TDS	WCH-A-033	MCAWW 160.1	MCAWW 160.1

Data Qualifier Summary

The uranium result for sample 0507286-17 is qualified as "U" because the associated calibration blank result is greater than the method detection limit (MDL) and the sample result is less than 5 times the blank result. The ammonia as N results for sample 0507286-3 is qualified as "J" because the holding time was missed.

Table 2. Data Qualifiers

Sample Number	Location	Analyte	Flag	Reason
0507286-17	2981(Equip. Blank)	U	U	Less than 5 times the calibration blank
0507286-3	0402	NH_3-N	J	Missed holding time

Sample Shipping/Receiving

Paragon Analytics in Fort Collins, Colorado, received 17 samples on July 29, 2005, accompanied by a Chain of Custody (COC) form. The COC form was checked to confirm that all of the samples were listed on the form with sample collection dates and times, and that signatures and dates were present indicating sample relinquishment and receipt. The sample submittal documents including the COC form, the sample submittal form, and the sample tickets had no errors or omissions.

Preservation and Holding Times

The sample shipment was received cool and intact with the temperature within the cooler of 1.2 °C, which complies with requirements. All samples were received in the correct container types and had been preserved correctly for the requested analyses and all samples were analyzed within the applicable holding times with the following exception. Sample 0402 was re-analyzed for ammonia as N after the holding time had expired. The ammonia as N result for this sample is qualified as "J" (estimated).

Laboratory Instrument Calibration

All laboratory instrument calibrations were performed correctly in accordance with the cited methods.

Method SW-846 6020

Calibrations for uranium were performed on August 4, 2005 and August 8, 2005. The initial calibrations were performed using six calibration standards resulting in a calibration curve with a correlation coefficient (r^2) value greater than 0.995. The absolute value of the curve intercept was less than 3 times the MDL. Calibration and laboratory spike standards were prepared from independent sources. Initial and continuing calibration verification (CCV) checks were made at the required frequency resulting in twelve CCVs. All calibration check results met the acceptance criteria. A reporting limit verification check was made at the required frequency to verify the linearity of the calibration curve near the practical quantitation limit. The check was within the acceptance criteria range. Mass calibration and resolution verifications were performed at the beginning of each analytical run in accordance with the analytical procedure. Internal standard recoveries were stable and within acceptable ranges.

Method SW-846 9056

The initial calibrations for chloride and sulfate were performed using five calibration standards each on August 1, 2005. The calibration curve r^2 values were greater than 0.995 and intercepts were less than 3 times the MDL. Initial calibration and calibration check standards were prepared from independent sources. Initial and continuing calibration checks were made at the required frequency resulting in seven CCVs. The calibration checks met the acceptance criteria.

Method MCAWW 350.1

The initial calibrations for ammonia as N were performed using six calibration standards on August 5, 2005 and August 25, 2005, resulting in a calibration curves with a r^2 values greater than 0.995 and an intercepts less than 3 times the MDL. Initial and continuing calibration checks were made at the required frequency resulting in nine CCVs. All calibration check results were within the acceptance criteria.

Method MCAWW 160.1

There is no initial or continuing calibration requirement associated with the determination of total dissolved solids (TDS).

Method and Calibration Blanks

The uranium initial and continuing calibration blanks (CCB) were below the practical quantitation limits but greater than the MDL with the exception of CCB6 and CCB10. The samples associated with these blanks were re-analyzed with acceptable blanks. The uranium result for sample 0507286-17 was less than 5 times the concentration of the associated CCB and is qualified as "U". The chloride, sulfate, ammonia as N, and TDS method blanks, and initial and CCBs were below the MDLs.

Inductively Coupled Plasma Interference Check Sample Analysis

Inductively coupled plasma interference check samples were analyzed at the required frequency to verify the instrumental interelement and background correction factors. All check sample results met the acceptance criteria.

Matrix Spike Analysis

Matrix spike and matrix spike duplicate pairs were analyzed for uranium, chloride, sulfate, and ammonia as N as a measure of method performance in the sample matrix. The spike recoveries met the recovery and precision criteria for all analytes.

Laboratory Replicate Analysis

The relative percent difference (RPD) values for the laboratory replicate sample and matrix spike duplicate sample results for all analytes were less than 20 percent, indicating acceptable laboratory precision.

Laboratory Control Sample

Laboratory control samples were analyzed at the correct frequency to provide information on the accuracy of the analytical method and the overall laboratory performance, including sample preparation. The results were acceptable for all analytes.

Metals Serial Dilution

Serial dilutions were performed during the uranium analysis to monitor physical or chemical interferences that may exist in the sample matrix. The results met the acceptance criteria.

Detection Limits/Dilutions

Samples were diluted in a consistent and acceptable manner when required. The samples were diluted prior to analysis of uranium to reduce interferences. The required detection limits were achieved for all analytes.

Completeness

Results were reported in the correct units for all analytes requested using contract-required laboratory qualifiers.

Chromatography Peak Integration

The integration of analyte peaks was reviewed for all ion chromatography data. There were no manual integrations performed and all peak integrations were satisfactory.

Electronic Data Deliverable File

The electronic data deliverable (EDD) file arrived on August 27, 2005. The Sample Management System EDD validation module was used to verify that the EDD file was complete and in compliance with requirements. The module compares the contents of the file to the requested analyses to ensure all and only the requested data are delivered. The contents of the EDD were manually examined to verify that the sample results accurately reflect the data contained in the sample data package.

Field Analyses/Activities

The following information summarizes the field activities for this sampling event period.

Field Activities

All monitor well results were qualified with an “F” flag in the database, indicating the wells were purged and sampled using the low-flow sampling method. A duplicate sample was collected from well 0588. There are no established regulatory criteria for the evaluation of field duplicate samples; therefore, U.S. Environmental Protection Agency (EPA) guidance for laboratory duplicates (which is conservative for field duplicates) was used to assess the precision of the field duplicates. Duplicate sample results varied by less than +/-20 RPD and are considered acceptable. An equipment blank was collected and analyzed for the same constituents as the regular water samples. Concentrations measured in the equipment blank were below levels of concern; therefore, equipment blank results are considered acceptable.

Certification

Results were reported in correct units for all analytes requested, appropriate contract-required laboratory qualifiers and target analyte lists were used, and the required detection limits were met when possible, or an explanation of why they were not met was given in the laboratory case narrative. All analytical quality control criteria were met except as qualified on the Ground Water Quality Data by Parameter, Surface Water Quality by Parameter, or equipment/trip blank database printouts. The meaning of data qualifiers is defined on the database printouts or defined in the EPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media Multi-Concentration, Document Number ILMO2.0, 1991. All data in this package are considered validated and may be treated as final results.

Laboratory Validation Lead: Steve Donivan — Steve Donivan — 10-10-05 — Date

Field Activities Validation Lead: J. E. Price — Jeff Price — 10/10/05 — Date

Attachment 1

Data Presentation

Minimums and Maximums Report

Minimums and Maximums Report

The Minimums and Maximums Report is generated by a data validation application (DataVal) used to query the SEEPro database. The DataVal compares the new data set with historical data and lists all new data that fall outside the historical data range. Values listed in the report are further screened using the following criteria. Results are not considered anomalous if (1) identified low concentrations are the result of low detection limits; (2) the concentration detected is within 50 percent of historical minimum or maximum values; (3) there were fewer than five historical samples for comparison.

SAMPLING DATA VALIDATION MINIMUMS AND MAXIMUMS REPORT -- No Field Parameters
LAB CODE: PAR, PARAGON (Fort Collins, CO)
LAB REQUISITION(S): 05070215
HISTORY BEGIN DATE: comparing to all historical data
REPORT DATE: 09/26/05 10:25:00: AM

				CURRENT			HISTORICAL MAXIMUM			HISTORICAL MINIMUM			COUNT	
SITE CODE	LOCATION CODE	SAMPLE DATE	ANALYTE	RESULT	QUALIFIERS LAB	QUALIFIERS DATA	RESULT	QUALIFIERS LAB	QUALIFIERS DATA	RESULT	QUALIFIERS LAB	QUALIFIERS DATA	N	N BELOW DETECT
MOA01	0236	07/27/2005	Ammonia Total as N	0.1	U		310			67			10	0
MOA01	0236	07/27/2005	Chloride	83			2300			340			10	0
MOA01	0236	07/27/2005	Sulfate	240			8100			1300			10	0
MOA01	0236	07/27/2005	Total Dissolved Solids	720			17000			2500			10	0
MOA01	0236	07/27/2005	Uranium	0.0051			2.6		J	0.39			10	0
MOA01	0583	07/28/2005	Uranium	0.5		F	2.6	E	JF	0.69		F	9	0
MOA01	0585	07/28/2005	Ammonia Total as N	37		F	500		F	38		F	6	0
MOA01	0590	07/28/2005	Ammonia Total as N	60		QF	680		F	83		FQ	7	0

SAMPLING DATA VALIDATION MINIMUMS AND MAXIMUMS REPORT -- No Field Parameters
LAB CODE: PAR, PARAGON (Fort Collins, CO)
LAB REQUISITION(S): 05070215
HISTORY BEGIN DATE: comparing to all historical data
REPORT DATE: 09/26/05 10:25:00: AM

SITE CODE	LOCATION CODE	SAMPLE DATE	ANALYTE	CURRENT RESULT	CURRENT QUALIFIERS LAB	CURRENT QUALIFIERS DATA	HISTORICAL MAXIMUM RESULT	HISTORICAL MAXIMUM QUALIFIERS LAB	HISTORICAL MAXIMUM QUALIFIERS DATA	HISTORICAL MINIMUM RESULT	HISTORICAL MINIMUM QUALIFIERS LAB	HISTORICAL MINIMUM QUALIFIERS DATA	COUNT N	COUNT N BELOW DETECT

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:

*	Replicate analysis not within control limits.
+	Correlation coefficient for MSA < 0.995.
A	TIC is a suspected aldol-condensation product.
B	Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
E	Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
Z	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
H	Holding time expired, value suspect.
I	Increased detection limit due to required dilution.
C	Pesticide result confirmed by GC-MS.
M	GFAA duplicate injection precision not met.
N	Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compund (TIC).
S	Result determined by method of standard addition (MSA).
U	Analytical result below detection limit.
W	Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
D	Analyte determined in diluted sample.
P	> 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
X	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
Y	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
>	Result above upper detection limit.
J	Estimated

DATA QUALIFIERS:

J	Estimated value.	F	Low flow sampling method used.	G	Possible grout contamination, pH > 9.
L	Less than 3 bore volumes purged prior to sampling.	R	Unusable result.	X	Location is undefined.
U	Parameter analyzed for but was not detected.	Q	Qualitative result due to sampling technique		

Anomalous Data Review Checksheet

Anomalous Data Review Checksheet

Site: Moab Processing Site **Sampling Date:** July 26-28, 2005

Reviewer: Jeff Price (Name) J.E. Price (Signature) 10/10/05 (Date)

Site Lead: John R. Ford (Name) John R Ford (Signature) 10-10-2005 (Date)

Loc. No.	Analyte	Type of Anomaly	Disposition
0236	Ammonia Total as N	Low	Low concentration due to high Colorado River flow.
0236	Chloride	Low	Low concentration due to high Colorado River flow.
0236	Sulfate	Low	Low concentration due to high Colorado River flow.
0236	TDS	Low	Low concentration due to high Colorado River flow.
0236	Uranium	Low	Low concentration due to high Colorado River flow.

Water Quality Data

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 9/26/2005 10:33 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY
Alkalinity, Total (As CaCO3	mg/L	0236	SL, RIV	07/27/2005	0001	0.00 - 0.00	142			#	-	-
	mg/L	0240	SL, RIV	07/27/2005	0001	0.00 - 0.00	138			#	-	-
	mg/L	0402	WL	07/27/2005	0001	17.00 - 17.00	326		F	#	-	-
	mg/L	0408	WL	07/28/2005	0001	26.00 - 26.00	198		F	#	-	-
	mg/L	0550	IS, IHYD	07/27/2005	0001	0.00 - 0.00	142			#	-	-
	mg/L	0580	WL	07/28/2005	0001	18.00 - 18.00	364		F	#	-	-
	mg/L	0582	WL	07/28/2005	0001	18.00 - 18.00	308		F	#	-	-
	mg/L	0583	WL	07/28/2005	0001	18.00 - 18.00	256		F	#	-	-
	mg/L	0584	WL	07/28/2005	0001	18.00 - 18.00	246		F	#	-	-
	mg/L	0585	WL	07/28/2005	0001	18.00 - 18.00	258		F	#	-	-
	mg/L	0586	WL	07/28/2005	0001	18.00 - 18.00	540		F	#	-	-
	mg/L	0587	WL	07/27/2005	0001	18.00 - 18.00	240		F	#	-	-
	mg/L	0588	WL	07/27/2005	0001	34.00 - 34.00	244		F	#	-	-
	mg/L	0589	WL	07/27/2005	0001	44.00 - 44.00	600		F	#	-	-
Ammonia Total as N	mg/L	0236	SL, RIV	07/27/2005	0001	0.00 - 0.00	0.1	U		#	0.1	-
	mg/L	0240	SL, RIV	07/27/2005	0001	0.00 - 0.00	0.1	U		#	0.1	-
	mg/L	0402	WL	07/27/2005	0001	17.00 - 17.00	41		JF	#	1	-
	mg/L	0408	WL	07/28/2005	0001	26.00 - 26.00	99		F	#	20	-
	mg/L	0550	IS, IHYD	07/27/2005	0001	0.00 - 0.00	0.1	U		#	0.1	-
	mg/L	0580	WL	07/28/2005	0001	18.00 - 18.00	6		F	#	0.2	-
	mg/L	0582	WL	07/28/2005	0001	18.00 - 18.00	100		F	#	5	-
	mg/L	0583	WL	07/28/2005	0001	18.00 - 18.00	170		F	#	50	-
	mg/L	0584	WL	07/28/2005	0001	18.00 - 18.00	130		F	#	5	-
	mg/L	0585	WL	07/28/2005	0001	18.00 - 18.00	37		F	#	1	-
	mg/L	0586	WL	07/28/2005	0001	18.00 - 18.00	160		F	#	10	-
	mg/L	0587	WL	07/27/2005	0001	18.00 - 18.00	30		F	#	1	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 9/26/2005 10:33 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY
Ammonia Total as N	mg/L	0588	WL	07/27/2005	0001	34.00 - 34.00	22		F	#	0.5	-
	mg/L	0588	WL	07/27/2005	0002	24.80 - 34.80	21		F	#	0.5	-
	mg/L	0589	WL	07/27/2005	0001	44.00 - 44.00	810		F	#	50	-
	mg/L	0590	WL, PZ	07/28/2005	0001		60		QF	#	2	-
Chloride	mg/L	0236	SL, RIV	07/27/2005	0001	0.00 - 0.00	83			#	2	-
	mg/L	0240	SL, RIV	07/27/2005	0001	0.00 - 0.00	86			#	2	-
	mg/L	0402	WL	07/27/2005	0001	17.00 - 17.00	510		F	#	10	-
	mg/L	0408	WL	07/28/2005	0001	26.00 - 26.00	140		F	#	4	-
	mg/L	0550	IS, IHYD	07/27/2005	0001	0.00 - 0.00	87			#	2	-
	mg/L	0580	WL	07/28/2005	0001	18.00 - 18.00	93		F	#	10	-
	mg/L	0582	WL	07/28/2005	0001	18.00 - 18.00	350		F	#	10	-
	mg/L	0583	WL	07/28/2005	0001	18.00 - 18.00	420		F	#	10	-
	mg/L	0584	WL	07/28/2005	0001	18.00 - 18.00	370		F	#	10	-
	mg/L	0585	WL	07/28/2005	0001	18.00 - 18.00	430		F	#	10	-
	mg/L	0586	WL	07/28/2005	0001	18.00 - 18.00	1200		F	#	20	-
	mg/L	0587	WL	07/27/2005	0001	18.00 - 18.00	520		F	#	10	-
	mg/L	0588	WL	07/27/2005	0001	34.00 - 34.00	650		F	#	10	-
	mg/L	0588	WL	07/27/2005	0002	24.80 - 34.80	650		F	#	10	-
	mg/L	0589	WL	07/27/2005	0001	44.00 - 44.00	21000		F	#	400	-
	mg/L	0590	WL, PZ	07/28/2005	0001		530		QF	#	10	-
Dissolved Oxygen	mg/L	0236	SL, RIV	07/27/2005	N001	0.00 - 0.00	5.91			#	-	-
	mg/L	0240	SL, RIV	07/27/2005	N001	0.00 - 0.00	5.61			#	-	-
	mg/L	0401	WL	07/28/2005	N001	18.00 - 18.00	2.23		F	#	-	-
	mg/L	0402	WL	07/27/2005	N001	17.00 - 17.00	2.27		F	#	-	-
	mg/L	0408	WL	07/28/2005	N001	26.00 - 26.00	4.09		F	#	-	-
	mg/L	0550	IS, IHYD	07/27/2005	N001	0.00 - 0.00	2.02			#	-	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 9/26/2005 10:33 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY
Dissolved Oxygen	mg/L	0580	WL	07/28/2005	N001	18.00 - 18.00	3.46		F	#	-	-
	mg/L	0581	WL	07/28/2005	N001	18.00 - 18.00	2.93		F	#	-	-
	mg/L	0582	WL	07/28/2005	N001	18.00 - 18.00	2.72		F	#	-	-
	mg/L	0583	WL	07/28/2005	N001	18.00 - 18.00	2.87		F	#	-	-
	mg/L	0584	WL	07/28/2005	N001	18.00 - 18.00	2.21		F	#	-	-
	mg/L	0585	WL	07/28/2005	N001	18.00 - 18.00	2.23		F	#	-	-
	mg/L	0586	WL	07/28/2005	N001	18.00 - 18.00	1.76		F	#	-	-
	mg/L	0587	WL	07/27/2005	N001	18.00 - 18.00	2.52		F	#	-	-
	mg/L	0588	WL	07/27/2005	N001	34.00 - 34.00	2.56		F	#	-	-
	mg/L	0588	WL	07/27/2005	N001	26.00 - 26.00	2.62		F	#	-	-
	mg/L	0589	WL	07/27/2005	N001	52.00 - 52.00	2.24		F	#	-	-
	mg/L	0589	WL	07/27/2005	N001	44.00 - 44.00	2.56		F	#	-	-
	mg/L	0590	WL, PZ	07/28/2005	N001		2.03		QF	#	-	-
Oxidation Reduction Potent	mV	0236	SL, RIV	07/27/2005	N001	0.00 - 0.00	179			#	-	-
	mV	0240	SL, RIV	07/27/2005	N001	0.00 - 0.00	170			#	-	-
	mV	0401	WL	07/28/2005	N001	18.00 - 18.00	216		F	#	-	-
	mV	0402	WL	07/27/2005	N001	17.00 - 17.00	198		F	#	-	-
	mV	0408	WL	07/28/2005	N001	26.00 - 26.00	202		F	#	-	-
	mV	0550	IS, IHYD	07/27/2005	N001	0.00 - 0.00	95			#	-	-
	mV	0580	WL	07/28/2005	N001	18.00 - 18.00	199		F	#	-	-
	mV	0581	WL	07/28/2005	N001	18.00 - 18.00	2.00		F	#	-	-
	mV	0582	WL	07/28/2005	N001	18.00 - 18.00	197		F	#	-	-
	mV	0583	WL	07/28/2005	N001	18.00 - 18.00	206		F	#	-	-
	mV	0584	WL	07/28/2005	N001	18.00 - 18.00	199		F	#	-	-
	mV	0585	WL	07/28/2005	N001	18.00 - 18.00	205		F	#	-	-
	mV	0586	WL	07/28/2005	N001	18.00 - 18.00	230		F	#	-	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 9/26/2005 10:33 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY
Oxidation Reduction Potent	mV	0587	WL	07/27/2005	N001	18.00 - 18.00	212		F	#	-	-
	mV	0588	WL	07/27/2005	N001	34.00 - 34.00	148		F	#	-	-
	mV	0588	WL	07/27/2005	N001	26.00 - 26.00	117		F	#	-	-
	mV	0589	WL	07/27/2005	N001	52.00 - 52.00	78		F	#	-	-
	mV	0589	WL	07/27/2005	N001	44.00 - 44.00	128		F	#	-	-
	mV	0590	WL, PZ	07/28/2005	N001		-336		QF	#	-	-
pH	s.u.	0236	SL, RIV	07/27/2005	N001	0.00 - 0.00	8.35			#	-	-
	s.u.	0240	SL, RIV	07/27/2005	N001	0.00 - 0.00	8.23			#	-	-
	s.u.	0401	WL	07/28/2005	N001	18.00 - 18.00	6.94		F	#	-	-
	s.u.	0402	WL	07/27/2005	N001	17.00 - 17.00	7.00		F	#	-	-
	s.u.	0408	WL	07/28/2005	N001	26.00 - 26.00	7.61		F	#	-	-
	s.u.	0550	IS, IHYD	07/27/2005	N001	0.00 - 0.00	8.05			#	-	-
	s.u.	0580	WL	07/28/2005	N001	18.00 - 18.00	6.84		F	#	-	-
	s.u.	0581	WL	07/28/2005	N001	18.00 - 18.00	7.14		F	#	-	-
	s.u.	0582	WL	07/28/2005	N001	18.00 - 18.00	7.56		F	#	-	-
	s.u.	0583	WL	07/28/2005	N001	18.00 - 18.00	7.34		F	#	-	-
	s.u.	0584	WL	07/28/2005	N001	18.00 - 18.00	7.38		F	#	-	-
	s.u.	0585	WL	07/28/2005	N001	18.00 - 18.00	7.16		F	#	-	-
	s.u.	0586	WL	07/28/2005	N001	18.00 - 18.00	6.76		F	#	-	-
	s.u.	0587	WL	07/27/2005	N001	18.00 - 18.00	6.89		F	#	-	-
	s.u.	0588	WL	07/27/2005	N001	34.00 - 34.00	7.62		F	#	-	-
	s.u.	0588	WL	07/27/2005	N001	26.00 - 26.00	7.76		F	#	-	-
	s.u.	0589	WL	07/27/2005	N001	52.00 - 52.00	6.68		F	#	-	-
	s.u.	0589	WL	07/27/2005	N001	44.00 - 44.00	6.83		F	#	-	-
	s.u.	0590	WL, PZ	07/28/2005	N001		7.76		QF	#	-	-
Specific Conductance	umhos/cm	0236	SL, RIV	07/27/2005	N001	0.00 - 0.00	1010			#	-	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 9/26/2005 10:33 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY
Specific Conductance	umhos/cm	0240	SL, RIV	07/27/2005	N001	0.00 - 0.00	1022			#	-	-
	umhos/cm	0401	WL	07/28/2005	N001	18.00 - 18.00	6364		F	#	-	-
	umhos/cm	0402	WL	07/27/2005	N001	17.00 - 17.00	5905		F	#	-	-
	umhos/cm	0408	WL	07/28/2005	N001	26.00 - 26.00	2581		F	#	-	-
	umhos/cm	0550	IS, IHYD	07/27/2005	N001	0.00 - 0.00	1112			#	-	-
	umhos/cm	0580	WL	07/28/2005	N001	18.00 - 18.00	3155		F	#	-	-
	umhos/cm	0581	WL	07/28/2005	N001	18.00 - 18.00	7221		F	#	-	-
	umhos/cm	0582	WL	07/28/2005	N001	18.00 - 18.00	3830		F	#	-	-
	umhos/cm	0583	WL	07/28/2005	N001	18.00 - 18.00	5557		F	#	-	-
	umhos/cm	0584	WL	07/28/2005	N001	18.00 - 18.00	5605		F	#	-	-
	umhos/cm	0585	WL	07/28/2005	N001	18.00 - 18.00	4741		F	#	-	-
	umhos/cm	0586	WL	07/28/2005	N001	18.00 - 18.00	10784		F	#	-	-
	umhos/cm	0587	WL	07/27/2005	N001	18.00 - 18.00	5752		F	#	-	-
	umhos/cm	0588	WL	07/27/2005	N001	26.00 - 26.00	2725		F	#	-	-
	umhos/cm	0588	WL	07/27/2005	N001	34.00 - 34.00	4887		F	#	-	-
	umhos/cm	0589	WL	07/27/2005	N001	44.00 - 44.00	61052		F	#	-	-
	umhos/cm	0589	WL	07/27/2005	N001	52.00 - 52.00	85222		F	#	-	-
	umhos/cm	0590	WL, PZ	07/28/2005	N001		5168		QF	#	-	-
Sulfate	mg/L	0236	SL, RIV	07/27/2005	0001	0.00 - 0.00	240			#	5	-
	mg/L	0240	SL, RIV	07/27/2005	0001	0.00 - 0.00	240			#	5	-
	mg/L	0402	WL	07/27/2005	0001	17.00 - 17.00	2400		F	#	25	-
	mg/L	0408	WL	07/28/2005	0001	26.00 - 26.00	850		F	#	10	-
	mg/L	0550	IS, IHYD	07/27/2005	0001	0.00 - 0.00	240			#	5	-
	mg/L	0580	WL	07/28/2005	0001	18.00 - 18.00	1500		F	#	25	-
	mg/L	0582	WL	07/28/2005	0001	18.00 - 18.00	1200		F	#	25	-
	mg/L	0583	WL	07/28/2005	0001	18.00 - 18.00	1900		F	#	25	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 9/26/2005 10:33 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY
Sulfate	mg/L	0584	WL	07/28/2005	0001	18.00 - 18.00	2100		F	#	25	-
	mg/L	0585	WL	07/28/2005	0001	18.00 - 18.00	1600		F	#	25	-
	mg/L	0586	WL	07/28/2005	0001	18.00 - 18.00	4400		F	#	50	-
	mg/L	0587	WL	07/27/2005	0001	18.00 - 18.00	2100		F	#	25	-
	mg/L	0588	WL	07/27/2005	0001	34.00 - 34.00	1100		F	#	25	-
	mg/L	0588	WL	07/27/2005	0002	24.80 - 34.80	1100		F	#	25	-
	mg/L	0589	WL	07/27/2005	0001	44.00 - 44.00	8800		F	#	250	-
	mg/L	0590	WL, PZ	07/28/2005	0001		2000		QF	#	25	-
Temperature	C	0236	SL, RIV	07/27/2005	N001	0.00 - 0.00	26.19			#	-	-
	C	0240	SL, RIV	07/27/2005	N001	0.00 - 0.00	26.01			#	-	-
	C	0401	WL	07/28/2005	N001	18.00 - 18.00	16.91		F	#	-	-
	C	0402	WL	07/27/2005	N001	17.00 - 17.00	17.63		F	#	-	-
	C	0408	WL	07/28/2005	N001	26.00 - 26.00	15.70		F	#	-	-
	C	0550	IS, IHYD	07/27/2005	N001	0.00 - 0.00	38.73			#	-	-
	C	0580	WL	07/28/2005	N001	18.00 - 18.00	16.70		F	#	-	-
	C	0581	WL	07/28/2005	N001	18.00 - 18.00	15.51		F	#	-	-
	C	0582	WL	07/28/2005	N001	18.00 - 18.00	14.86		F	#	-	-
	C	0583	WL	07/28/2005	N001	18.00 - 18.00	16.35		F	#	-	-
	C	0584	WL	07/28/2005	N001	18.00 - 18.00	16.38		F	#	-	-
	C	0585	WL	07/28/2005	N001	18.00 - 18.00	15.58		F	#	-	-
	C	0586	WL	07/28/2005	N001	18.00 - 18.00	15.86		F	#	-	-
	C	0587	WL	07/27/2005	N001	18.00 - 18.00	17.22		F	#	-	-
	C	0588	WL	07/27/2005	N001	34.00 - 34.00	17.23		F	#	-	-
	C	0588	WL	07/27/2005	N001	26.00 - 26.00	19.00		F	#	-	-
	C	0589	WL	07/27/2005	N001	44.00 - 44.00	19.92		F	#	-	-
	C	0589	WL	07/27/2005	N001	52.00 - 52.00	18.09		F	#	-	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 9/26/2005 10:33 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY
Temperature	C	0590	WL, PZ	07/28/2005	N001		24.74		QF	#	-	-
Total Dissolved Solids	mg/L	0236	SL, RIV	07/27/2005	0001	0.00 - 0.00	720			#	40	-
	mg/L	0240	SL, RIV	07/27/2005	0001	0.00 - 0.00	710			#	40	-
	mg/L	0402	WL	07/27/2005	0001	17.00 - 17.00	5000		F	#	200	-
	mg/L	0408	WL	07/28/2005	0001	26.00 - 26.00	1500		F	#	40	-
	mg/L	0550	IS, IHYD	07/27/2005	0001	0.00 - 0.00	720			#	40	-
	mg/L	0580	WL	07/28/2005	0001	18.00 - 18.00	3000		F	#	80	-
	mg/L	0582	WL	07/28/2005	0001	18.00 - 18.00	2500		F	#	80	-
	mg/L	0583	WL	07/28/2005	0001	18.00 - 18.00	3700		F	#	80	-
	mg/L	0584	WL	07/28/2005	0001	18.00 - 18.00	3900		F	#	80	-
	mg/L	0585	WL	07/28/2005	0001	18.00 - 18.00	3700		F	#	80	-
	mg/L	0586	WL	07/28/2005	0001	18.00 - 18.00	9400		F	#	200	-
	mg/L	0587	WL	07/27/2005	0001	18.00 - 18.00	4800		F	#	80	-
	mg/L	0588	WL	07/27/2005	0001	34.00 - 34.00	3000		F	#	80	-
	mg/L	0588	WL	07/27/2005	0002	24.80 - 34.80	3000		F	#	80	-
	mg/L	0589	WL	07/27/2005	0001	44.00 - 44.00	45000		F	#	2000	-
	mg/L	0590	WL, PZ	07/28/2005	0001		4600		QF	#	200	-
Turbidity	NTU	0236	SL, RIV	07/27/2005	N001	0.00 - 0.00	566			#	-	-
	NTU	0240	SL, RIV	07/27/2005	N001	0.00 - 0.00	1000	>		#	-	-
	NTU	0401	WL	07/28/2005	N001	18.00 - 18.00	12.4		F	#	-	-
	NTU	0402	WL	07/27/2005	N001	17.00 - 17.00	5.89		F	#	-	-
	NTU	0408	WL	07/28/2005	N001	26.00 - 26.00	12.6		F	#	-	-
	NTU	0550	IS, IHYD	07/27/2005	N001	0.00 - 0.00	46.2			#	-	-
	NTU	0580	WL	07/28/2005	N001	18.00 - 18.00	8.77		F	#	-	-
	NTU	0581	WL	07/28/2005	N001	18.00 - 18.00	53.2		F	#	-	-
	NTU	0582	WL	07/28/2005	N001	18.00 - 18.00	8.65		F	#	-	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 9/26/2005 10:33 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY
Turbidity	NTU	0583	WL	07/28/2005	N001	18.00 - 18.00	11.7		F	#	-	-
	NTU	0584	WL	07/28/2005	N001	18.00 - 18.00	22.9		F	#	-	-
	NTU	0585	WL	07/28/2005	N001	18.00 - 18.00	1.58		F	#	-	-
	NTU	0586	WL	07/28/2005	N001	18.00 - 18.00	6.18		F	#	-	-
	NTU	0587	WL	07/27/2005	N001	18.00 - 18.00	15.3		F	#	-	-
	NTU	0588	WL	07/27/2005	N001	34.00 - 34.00	3.75		F	#	-	-
	NTU	0588	WL	07/27/2005	N001	26.00 - 26.00	21.5		F	#	-	-
	NTU	0589	WL	07/27/2005	N001	52.00 - 52.00	12.4		F	#	-	-
	NTU	0589	WL	07/27/2005	N001	44.00 - 44.00	3.93		F	#	-	-
	NTU	0590	WL, PZ	07/28/2005	N001		1000	>	QF	#	-	-
Uranium	mg/L	0236	SL, RIV	07/27/2005	0001	0.00 - 0.00	0.0051			#	3.8E-06	-
	mg/L	0240	SL, RIV	07/27/2005	0001	0.00 - 0.00	0.005			#	3.8E-06	-
	mg/L	0402	WL	07/27/2005	0001	17.00 - 17.00	0.680		F	#	0.00019	-
	mg/L	0408	WL	07/28/2005	0001	26.00 - 26.00	0.160		F	#	1.9E-05	-
	mg/L	0550	IS, IHYD	07/27/2005	0001	0.00 - 0.00	0.0042			#	3.8E-06	-
	mg/L	0580	WL	07/28/2005	0001	18.00 - 18.00	0.580		F	#	0.00019	-
	mg/L	0582	WL	07/28/2005	0001	18.00 - 18.00	0.270		F	#	1.9E-05	-
	mg/L	0583	WL	07/28/2005	0001	18.00 - 18.00	0.500		F	#	0.00019	-
	mg/L	0584	WL	07/28/2005	0001	18.00 - 18.00	0.660		F	#	0.00019	-
	mg/L	0585	WL	07/28/2005	0001	18.00 - 18.00	0.490		F	#	0.00019	-
	mg/L	0586	WL	07/28/2005	0001	18.00 - 18.00	1.300		F	#	0.00038	-
	mg/L	0587	WL	07/27/2005	0001	18.00 - 18.00	0.800		F	#	0.00019	-
	mg/L	0588	WL	07/27/2005	0001	34.00 - 34.00	0.270		F	#	1.9E-05	-
	mg/L	0588	WL	07/27/2005	0002	24.80 - 34.80	0.270		F	#	1.9E-05	-
	mg/L	0589	WL	07/27/2005	0001	44.00 - 44.00	2.100		F	#	0.00038	-
	mg/L	0590	WL, PZ	07/28/2005	0001		0.0068		QF	#	3.8E-06	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 9/26/2005 10:33 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY

RECORDS: SELECTED FROM USEE200 WHERE site_code='MOA01' AND location_code in('0402','0408','0580','0582','0583','0584','0585','0586','0587','0588','0589','0590','0236','0240','0550','0401','0581') AND quality_assurance = TRUE AND (data_validation_qualifiers IS NULL OR data_validation_qualifiers NOT LIKE '%R%' AND data_validation_qualifiers NOT LIKE '%X%') AND DATE_SAMPLED between #7/26/2005# and #7/28/2005#

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LOCATION TYPES: IS INJECTION SYSTEM SL SURFACE LOCATION WL WELL

LOCATION SUBTYPES: IHYD Injection System Hydrant PZ Piezometer RIV River

LAB QUALIFIERS:

*	Replicate analysis not within control limits.
+	Correlation coefficient for MSA < 0.995.
>	Result above upper detection limit.
A	TIC is a suspected aldol-condensation product.
B	Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
C	Pesticide result confirmed by GC-MS.
D	Analyte determined in diluted sample.
E	Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
H	Holding time expired, value suspect.
I	Increased detection limit due to required dilution.
J	Estimated
M	GFAA duplicate injection precision not met.
N	Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compund (TIC).
P	> 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
S	Result determined by method of standard addition (MSA).
U	Analytical result below detection limit.
W	Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
X	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
Y	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
Z	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.

DATA QUALIFIERS:

F	Low flow sampling method used.	G	Possible grout contamination, pH > 9.	J	Estimated value.
L	Less than 3 bore volumes purged prior to sampling.	Q	Qualitative result due to sampling technique	R	Unusable result.
U	Parameter analyzed for but was not detected.	X	Location is undefined.		

QA QUALIFIER: # = validated according to Quality Assurance guidelines.

Water Level Data

STATIC WATER LEVELS (USEE700) FOR SITE MOA01, Moab Site
REPORT DATE: 9/26/2005 10:33 am

LOCATION CODE	FLOW CODE	TOP OF CASING ELEVATION (FT)	MEASUREMENT		DEPTH FROM TOP OF CASING (FT)	WATER ELEVATION (FT)	WATER LEVEL FLAG
			DATE	TIME			
0401	O	3969.60	07/28/2005	10:45	14.74	3954.86	
0402	O	3968.63	07/27/2005	16:51	14.25	3954.38	
0408	O	3969.17	07/28/2005	10:22	14.55	3954.62	
0580		3969.32	07/28/2005	08:18	15.55	3953.77	
0581		3969.02	07/28/2005	09:01	14.78	3954.24	
0582		3969.65	07/28/2005	08:38	15.29	3954.36	
0583		3969.64	07/28/2005	09:16	15.08	3954.56	
0584		3969.13	07/28/2005	09:36	14.40	3954.73	
0585		3969.36	07/28/2005	09:55	14.55	3954.81	
0586		3969.20	07/28/2005	10:59	13.97	3955.23	
0587		3968.89	07/27/2005	17:13	14.32	3954.57	
0588		3969.04	07/27/2005	18:02	14.22	3954.82	
0589		3968.87	07/27/2005	17:32	14.14	3954.73	
0590		3956.70	07/26/2005	15:55	2.40	3954.30	

RECORDS: SELECTED FROM USEE700 WHERE site_code='MOA01' AND location_code in('0402','0408','0580','0582','0583','0584','0585','0586','0587','0588','0589','0590','0236','0240','0550','0401','0581') AND LOG_DATE between #7/26/2005# and #7/28/2005#

FLOW CODES: O ON-SITE

WATER LEVEL FLAGS:

Blanks

BLANKS REPORT
LAB CODE: PAR, PARAGON (Fort Collins, CO)
LAB REQUISITION(S): 05070215
REPORT DATE: 09/26/05 10:24:41: AM

PARAMETER	SITE CODE	LOCATION ID	SAMPLE DATE	ID	UNITS	RESULT	QUALIFIERS LAB	QUALIFIERS DATA	DETECTION LIMIT	UNCERTAINTY	SAMPLE TYPE
Ammonia Total as N	MOA01	0999	07/27/2005	0001	mg/L	0.1	U		0.1		E
Chloride	MOA01	0999	07/27/2005	0001	mg/L	0.2	U		0.2		E
Sulfate	MOA01	0999	07/27/2005	0001	mg/L	0.5	U		0.5		E
Total Dissolved Solids	MOA01	0999	07/27/2005	0001	mg/L	20	U		20		E
Uranium	MOA01	0999	07/27/2005	0001	mg/L	0.00003	B	U	0.0000038		E

BLANKS REPORT
LAB CODE: PAR, PARAGON (Fort Collins, CO)
LAB REQUISITION(S): 05070215
REPORT DATE: 09/26/05 10:24:41: AM

PARAMETER	SITE CODE	LOCATION ID	SAMPLE DATE	ID	UNITS	RESULT	QUALIFIERS LAB	QUALIFIERS DATA	DETECTION LIMIT	UNCERTAINTY	SAMPLE TYPE

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:

*	Replicate analysis not within control limits.
+	Correlation coefficient for MSA < 0.995.
A	TIC is a suspected aldol-condensation product.
B	Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
E	Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
Z	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
H	Holding time expired, value suspect.
I	Increased detection limit due to required dilution.
C	Pesticide result confirmed by GC-MS.
M	GFAA duplicate injection precision not met.
N	Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compund (TIC).
S	Result determined by method of standard addition (MSA).
U	Analytical result below detection limit.
W	Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
D	Analyte determined in diluted sample.
P	> 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
X	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
Y	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
>	Result above upper detection limit.
J	Estimated

DATA QUALIFIERS:

J	Estimated value.	F	Low flow sampling method used.	G	Possible grout contamination, pH > 9.
L	Less than 3 bore volumes purged prior to sampling.	R	Unusable result.	X	Location is undefined.
U	Parameter analyzed for but was not detected.	Q	Qualitative result due to sampling technique		

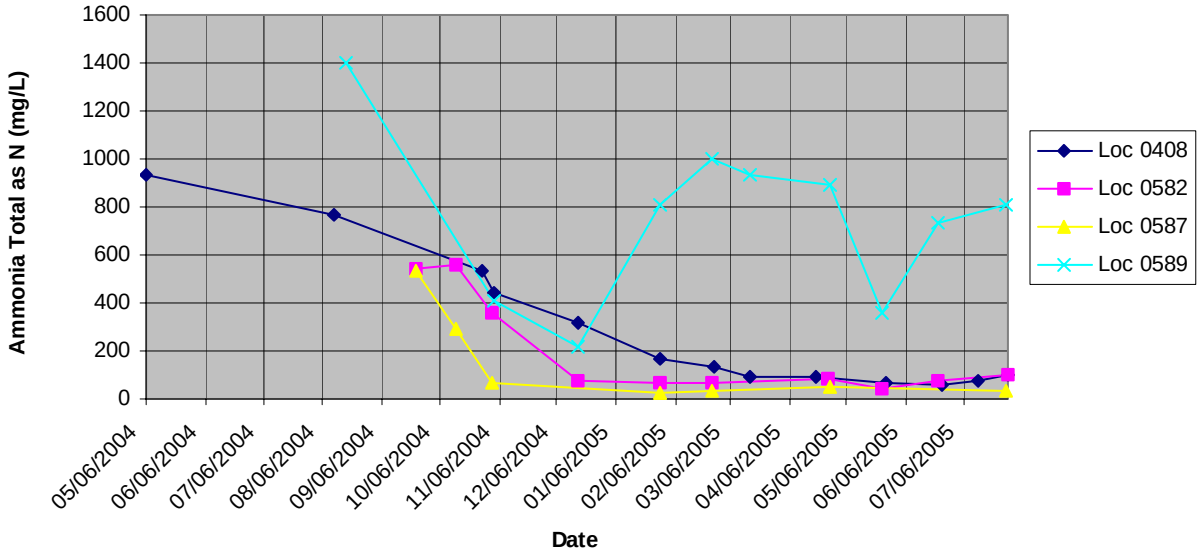
SAMPLE TYPES:

E	EQUIPMENT BLANK

Time Versus Concentration Graphs

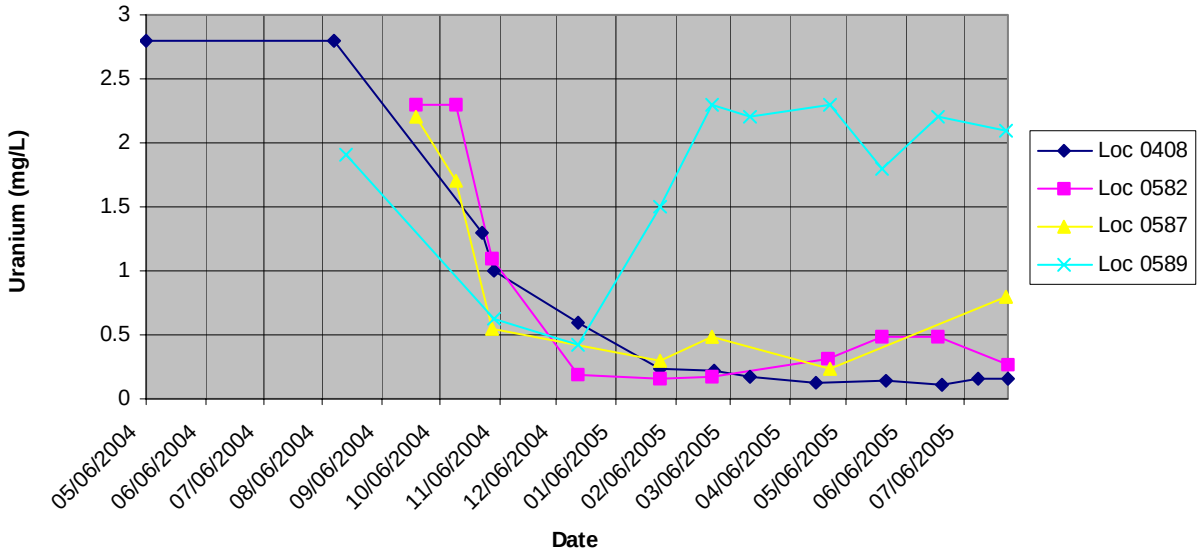
Moab Site (MOA01)

Ammonia Total as N Concentration



Moab Site (MOA01)

Uranium Concentration



Attachment 2

Trip Report

Stoller

established 1959

DATE: August 23, 2005

TO: Ken Karp

FROM: K. G. Pill

SUBJECT: Trip Report

Site: Moab – Interim Action Configuration 2 Injection Test Sampling – July 2005

Date of Sampling Event: July 26, 27, and 28, 2005.

Team Members: Ken Pill and Steve Hall

Number of Locations Sampled: 11 CF2 observation wells (0402, 0408, 0580, 0582 through 0587, 0588 [34 ft bgs], and 0589 [44 ft bgs]), 1 piezometer (0590), 2 surface waters (0236 and 0240), and 1 injection water sample (0550). Including one equipment blank and one duplicate, a total of **17** samples were collected.

Locations in Which Field Parameters Were Measured Only: Field parameters were measured from 4 CF2 observation wells (0401, 0581, 0588 [26 ft bgs], and 0589 [52 ft bgs]). Samples were not submitted to Paragon for laboratory analysis from these locations.

Locations Not Sampled/Reason: The top of piezometer 0591 was below the surface of the river, and could not be sampled. Due to the high stage of the Colorado River it was also not possible to safely reach piezometers 0592 and 0593. In addition, piezometer 0593 is apparently buried below approximately 2 to 3 ft of sediment (deposited during the 2005 runoff). As a result, samples were not collected from these locations.

Field Variance: Only a 125 ml sample was collected for uranium analysis as opposed to the standard 500 ml sample volume. Limited sample volume was available for analysis from location 0590. This sample was split and preserved as directed by the laboratory for proper analysis.

Quality Control Sample Cross Reference: Following are the false identifications assigned to the quality control samples:

False ID	True ID	Sample Type	Associated Matrix	Ticket Number
2982	0588	Duplicate from 34 ft bgs	Ground Water	NDV-504
2981	NA	Equipment Blank – GW Equip	DI Water	NDV-506

RIN Number Assigned: All samples were assigned to RIN **05070215**.

Sample Shipment: All samples were shipped in one cooler overnight FEDEX to Paragon Analytics, Inc. from Moab, Utah, on July 28, 2005 (Airbill No. 8473 2967 6546).

Location Specific Information – CF2 Observation Wells: All observation wells were sampled using micro-purge techniques with a peristaltic pump and downhole tubing. Sample depths and water levels for each observation well are listed below.

Well No.	Date	Time	Depth to Water (ft btoc)	Sample Depth (ft bgs)
0402	7/27/05	16:51	14.25	17
0408	7/28/05	10:22	14.55	26
0580	7/28/05	08:18	15.55	18
0582	7/28/05	08:38	15.29	18
0583	7/28/05	09:16	15.08	18
0584	7/28/05	09:36	14.40	18
0585	7/28/05	09:55	14.55	18
0586	7/28/05	10:59	13.97	18
0587	7/27/05	17:13	14.32	18
0588	7/27/05	18:16	14.22	34
0589	7/27/05	17:32	14.14	44

Field parameters (only) were measured from locations 0401, 0581, 0588 (26 ft bgs), and 0589 (52 ft bgs). These data are presented below with the sample depths (provided in feet bgs). These samples were not submitted for laboratory analysis.

Well No.	Date	Time	Sample Depth (ft bgs)	Depth To Water (ft btoc)	Field Parameters					
					Temp (^{o}C)	Spec Cond (µS/cm)	D.O. (mg/L)	pH	ORP	Turb. (NTUs)
0401	7/28/05	10:45	18	14.74	16.91	6,364	2.23	6.94	216	12.4
0581	7/28/05	09:01	18	14.78	15.51	7,221	2.93	7.14	210	53.2
0588	7/27/05	18:02	26	14.22	19.0	2,725	2.62	7.76	117	21.5
0589	7/27/05	17:48	52	14.14	18.09	85,222	2.24	6.68	78	12.4

Location Specific Information – Piezometer Sampling: This sampling event represents the first time the piezometers were sampled since March 2005, and the first time since the 2005 Colorado spring runoff peak flows. While it was possible to sample piezometer 0590, piezometer 0591 was under water, and the river flow was still too high to safely reach piezometers 0592 and 0593. Piezometer 0593 apparently is under 2 to 3 ft of sediment deposited during the runoff high flows. Prior to sampling 0590, it was necessary to develop the piezometer, which contained a significant amount of sediment. The table below presents the water level, new stick up height, and depth to the river surface 24 hrs after the development was completed.

PZ No.	Date	Time	Depth to Water (ft btoc)	Stick Up Height (ft)	Depth to River Surface (ft btoc)
0590	7/26/05	15:55	2.40	3.35	2.20

Approximately 120 mls was submitted for analysis for location 0590.

Location Specific Information – Surface Water Sampling: The surface water sample for location 0236 was collected in approximately the same location as previous samples were collected. However, we were forced (due to the high river stage) to collect the sample from the main riverbank as opposed to the small island in this vicinity (which was below the river surface). This event represents the first time since March 2005 this location was sampled due to high runoff flows. The sample was collected ~ 15 to 20 ft off the main bank, at some unknown depth due to the high turbidity of the river (photo attached).

The sample collected from location 0240 was collected near the base of piezometer 0590, approximately 5 ft off the bank at a depth from 1 to 2 ft below the surface (photo attached).

Location Specific Information – Injection Water Sampling: The hydrant (location 0550) was used to sample injection water from the fresh water supply line for this event.

Well Inspection Summary: A well inspection was not conducted.

Equipment: The conductivity probe for the YSI failed a calibration check and was replaced during this event at 09:00 on July 27, 2005. The pH probe was also replaced at 10:30 on July 27, 2005.

Site Issues: The injection test had been running approximately 33 weeks (since October 6, 2004) prior to having injected water flows reduced in mid-April 2005 in response to the high river stage. The system had been injecting a minimal volume of water approximately two months prior this sampling effort.

According to the USGS Cisco Gaging Station (Station No. 09180500), the mean daily Colorado River Flows during this sampling event are provided below:

Date	Daily Mean Flow (cfs)
07/25/2005	4,950
07/26/2005	5,960
07/27/2005	6,640
07/28/2005	6,250
07/29/2005	5,310

Corrective Action Required/Taken: None.

(KGP/lcg)

cc: J. D. Berwick, DOE-EM (e)
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Surface Water Location 0240, Piezometers 0590 and 0591

Piezometer 0592 (0593 buried)

Surface Water Location 0236